www.unal.edu.co/icn/publicaciones/caldasia.htm Caldasia 28(1):135-155. 2006

THE AMPHIBIAN FAUNA IN THE VILLAVICENCIO REGION OF EASTERN COLOMBIA

La fauna anfibia en la región de Villavicencio en el este de Colombia

JOHN D. LYNCH
Laboratorio de Anfibios, Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Apartado 7495, Bogotá. jdlynch@unal.edu.co

ABSTRACT

The Villavicencio Region, at the base of the eastern mountain range, harbors an amphibian fauna consisting of three caecilians, 45 frogs, and one salamander. This fauna includes 16 abundant species of frogs and toads that occupy open habitats and which do not invade forested areas of these lowlands. An additional 24 species require moist conditions and occur principally in areas supporting forests. Seven other species are species of the Andean slopes that have their lowest records in the lowlands. This local fauna is enriched in treefrogs and impoverished in terms of centrolenids and leptodactylids relative to the diversities of various amphibian groups in the country as a whole.

Key words. Caecilians, Frogs, Piedmont, Salamanders, Zoogeography.

RESUMEN

En la región de Villavicencio, en la base de la cordillera Oriental, se encuentra una fauna de anfibios que consiste de tres cecilias, 45 ranas y una salamandra. La fauna incluye 16 especies abundantes que ocupan hábitats abiertos y no entran en áreas de bosque. Otras veinticuatro especies requieren condiciones más húmedas y ocupan áreas boscosas. Siete especies pueden establecerse en las laderas andinas, aunque también se encuentran en las tierras bajas. La fauna local es rica en hílidos y pobre en centrolénidos y leptodactylidos con relación a los valores de riqueza y diversidad en otras áreas del país.

Palabras clave. Cecilias, piedemonte, ranas, salamandras, zoogeografía.

INTRODUCTION

For thirty years, field courses of the Universidad Nacional de Colombia have sampled the animal fauna in many parts of the country but relatively little of the accumulated collections has been used in the preparation of scientific reports. One of the general regions visited frequently has been the Villavicencio region. Rarely, collectors have sampled the Andean slopes immediately above a series of towns in the piedmont (Acacias, Cubarral, Cumaral, Guamal, Medina, Paratabueno, Restrepo, San Martín, Santa María, and Villavicencio). There is a frog fauna of the eastern Amazonian slopes of the Andes but the only species of that fauna that will be reported here are those species which have lowland records (below 1000 m) in the region. The frog collections made in the vicinity of Florencia, Caquetá, in 1990 have been reported (Suárez Mayorga, 2000).

Other published reports are those of William Pyburn in the early 1970s in eastern Colombia (Fouquette & Pyburn, 1972, Pyburn, 1973, Pyburn & Fouquette, 1971), the miniature leptodactylids of the genus *Pseudopaludicola* (Lynch, 1989), some of the frogs of the genus *Leptodactylus* (Heyer, 1978, 1979, 1994), the few *Eleutherodactylus* in the region (Lynch, 1994), part of the collections of centrolenids (Ruiz Carranza & Lynch, 1998), all of the caecilians (Lynch, 2000), and all of the gladiator frogs of the *Hyla boans* group (Lynch & Suárez Mayorga, 2001). Except for these published reports, one essentially must revise old literature (Stebbins & Hendrickson, 1959, Cochran & Goin, 1970) to convince oneself that there is an amphibian fauna there.

Two of the three orders of amphibians (Caudata and Gymnophiona) are represented by one (*Bolitoglossa altamazonica*) and three species (*Potomotyphlus kaupii, Siphonops annulatus¸* and *Typhlonectes compressicauda*), respectively, in the region. Frogs and toads (Anura or Salientia) are well-represented in the region and all eight families of frogs or toads currently recognized and known for the country occur in the region.

As defined here, the Villavicencio region consists of lowlands (below 1000 m) in eastern Boyacá, extreme eastern Cundinamarca, and western Meta. To the south, it touches the Serranía de la Macarena (Meta). This sector shows at least three environmental gradients: (1) a dry to wet gradient, across the lowlands; (2) a gradient from open habitats (some apparently natural, the llanos, and others induced by anthropogenic activities--the clearing of lands for pastures or crops) to wet forested habitats; and (3) an altitudinal gradient (from perhaps 300 m to my upper limit of 1000 m). The last gradient mixes the effect of altitude with the effect of moisture because at higher elevations, the lower night time temperatures provide compensating moisture. The amphibian fauna of the Villavicencio Region extends to the north into Arauca and Casanare as well as into western Venezuela with the addition of very few species. Looking at the subset of species characteristic of open habitats, this fauna "disappears" to the SSW (Suárez Mayorga, 2000).

MATERIALS & METHODS

Although I have examined many additional specimens housed in other institutions, this report concerns only material housed in the amphibian collection of the Instituto de Ciencias Naturales. Approximately 2550 specimens housed in that collection were examined for this study. Actual records are provided in the appendix.

THE AMPHIBIAN FAUNA OF THE VILLAVICENCIO REGION

Order CAUDATA

Family Plethodontidae

This is the only family of salamanders found on the continent but is very poorly-known.

Bolitoglossa altamazonica

This species is widely distributed in the Amazonian lowlands (Brame & Wake, 1963) and there is a suspicion that it is actually a species complex. A description is available in Brame & Wake (1963). In the Villavicencio region, the species appears to be confined to the wettest fringe of the piedmont. Elsewhere in Colombia, the species is known from scattered localities near the frontiers with Brasil and Peru; the record from the Magdalena valley by Brame & Wake (1963) is a mis-identification of another species (A. Acosta, pers. comm.).

Order GYMNOPHIONA

Family Caeciliidae

This family is represented by a good number of species in Colombia, distributed from sea-level to at least 2300 m (Lynch, 2000). Previously, Lynch (2000) used the family-group name Caeciliaidae but he was unaware that the International Commision of Zoological Nomenclature (Anon., 1996) had reversed its earlier decision so as to allow Caeciliidae to refer to caecilians rather than psocopterans (insects). Several species are known for the wetter part of the Amazonian lowlands of Colombia and it is possible that *Microcaecilia albiceps* extends to the north of the Florencia region along the piedmont.

Siphonops annulatus

This is the only terrestrial caecilian in the region. Nearly all records of *S. annulatus* for Colombia were reported by Lynch (2000)—the only new records are those from Acacias. The best description available is that of Taylor (1968). As others have noted, unlike most caecilians, *S. annulatus* seems more tolerant of dry conditions. At Acacias in 2004, the species was common under decomposing trunks of the African oil palm, even in grazed pastures.

Family Typhlonectidae

Two species are known east of the Andes (Lynch, 2000) and both reach the Villavicencio region.

Potomotyphlus kaupii

This aquatic caecilian is expected to occur in all the rivers flowing northeast and southeast from the Andes although there are only five records available (Lynch, 2000, and recent collections from Leticia). The few records probably reflect the difficulties of collecting in rivers and the low frequency of herpetological collections in such habitats. The best description is that by Taylor (1968).

Typhlonectes compressicauda

The only published record was for Leticia (Duellman & Trueb, 1994), where the species is relatively abundant. Recent collections have revealed that the species is found as well near Puerto Gaitán, Meta. This new record suggests that the absence of records is more the result of failure to search for aquatic caecilians than their actual distributions. As an aquatic organism, it is resistant to the vicissitudes of a dry season. Taylor (1968) provides descriptions.

Order ANURA

Family Bufonidae

True toads comprise one of the larger families of frogs and toads in Colombia but are divided more or less into one set centered on the Andean chains and a second set found in the lowlands. The Villavicencio region fauna consists of the second set. Two genera are found there, *Bufo* with four species, and a single species of *Dendrophryniscus.*

Bufo glaberrimus

Although found below 1000 m in the region, the species seems more likely a species of the Amazonian slope fauna. The description by Cochran & Goin (1970) is acceptable but they appear to have confused no fewer than three species (*Bufo blombergi, B. glaberrimus,* and *B. guttatus*) in their list of specimens examined. East of the Andes in Colombia, there are two species of the *Bufo guttatus* group--*B. glaberrimus* of the piedmont (or eastern Andean slopes) and *B. guttatus* in rocky areas along the eastern border of the country (Amazonas to Vichada). The latter was incorrectly reported as *B. anderssoni* by Ardila R & Ruiz C (1997) and Ruiz C *et al.* (1996)—the specimens upon which the reports were made are all juveniles and appear to me indistinguishable from *B. guttatus.* The report of *B. guttatus* from just above Villavicencio by Stebbins & Hendrickson (1959) is based on *B. glaberrimus.* This is an unusual toad in that its tadpoles live in low-gradient streams.

Bufo granulosus

The description by Cochran & Goin (1970) is satisfactory. This is a common toad in areas of intervention and can be found breeding in very small and shallow puddles. It is widely distributed in open habitats over the Caribbean coast and Magdalena valley of Colombia, in the southwestern part of the Maracaibo Basin in Colombia, and across the eastern llanos.

Bufo marinus

This is the largest of the true toads in the region and is most commonly found in towns and associated with human occupation (fincas and haciendas)—it rarely occurs in natural forests. The description by Cochran & Goin (1970) is satisfactory. Although a large species, its tadpoles are very small and easily recognized by the bi-colored tail musculature (brown or black above, cream below).

Bufo "typhonius"

The species found in the Villavicencio region (most localities are along the base of the eastern Cordillera—the species does not extend to the east) is involved in a taxonomic nightmare and may be undescribed (Vélez, 1995). To attach some name, I follow Cochran & Goin (1970), who confused all of the species of this group in Colombia under a single name. The described specimen in Cochran & Goin (1970) is a species found in the west-central part of the Amazon Basin—that species does not come so near the Andes. The best descriptions are those of Stebbins & Hendrickson (1959) and Velez (1995, in an unpublished undergraduate thesis) and her (2000) description of what may be the same toad under the name *B. sternostignatus.*

Dendrophryniscus minutus

This tiny toad, better known from the Amazon Basin (ICN has records from Amazonas, Putumayo, and Vaupés), occurs in well-forested localities to the immediate SE of Villavicencio. Unlike other toads for the region, this species lacks parotoid glands. The animal is active on the forest floor by day. The description in Duellman (1978) is brief but enables easy recognition; the original description by Andersson (1945) is more detailed but difficult to access.

Family Centrolenidae

Centrolenids require streams for breeding and the streams must be forested. Accordingly, all records are closely associated with the Andean cordillera. The two species known for the Villavicencio region are lowland species, barely occurring above 1000 m.

Cochranella flavopunctata

The best description is that by Lynch & Duellman (1973). The species occurs along the eastern foothills of the Andes in Ecuador and is known from the Colombian departments of Boyacá, Caquetá, and Meta. Males call from the upper surfaces of leaves over streams and egg masses are deposited on the upper surfaces of leaves. The green body with small yellow spots enables rapid recognition of the animal in life. Once preserved, it is most easily separated from the other centrolenid with which it is sympatric by the white peritoneum of the body wall (in *Hyalinobatrachium munozorum* the parietal peritoneum is transparent enabling a view of the white viscera). This is a microhabitat specialist and seldom collected.

Hyalinobatrachium munozorum

The best description is that by Lynch & Duellman (1973). This species is microsympatric with the former but perhaps does not occur as high on the Andean slopes. The visible white viscera allow rapid identification. Males call from the underside of leaves over streams and deposit their egg masses there. The egg masses are guarded by the male parent. The microhabitat of this species is not visited frequently by collectors.

Family Dendrobatidae

This family has a peculiar distribution within Colombia, largely defined by its reproductive biology. Frogs of this family have terrestrial eggs, normally guarded by the male parent. Upon hatching, in the vast majority of cases, the tadpoles climb upon the back of the male parent, who transports them through the environment, presumably adjusting to conditions of humidity and temperature—ultimately, the parent deposits the back-borne, non-feeding, tadpoles in some body of water, where they assume an exotrophic life. The ecological description for the Villavicencio region is one that is not favorable to this reproductive mode, although to the S and SE, one finds wet tropical forests—accordingly, this family is poorly represented in this region.

Dendrobatids can be recognized readily for having a pair of gland-like pads on the dorsal surface of each digital pad (most evident on the foot). Male parents frequently are found to be transporting their tadpoles on the back.

Colostethus cepedai

The taxonomy of this species remains somewhat clouded for me. Morales (2002) described *C. cepedai* from Villavicencio based on material collected simultaneously with the type-series of *C. juani*. This taxon apparently applies to his *trilineatus* group (defined on the basis of two characters—a basal web between the third and fourth toes of the foot and a pale blotch (not extending onto the posterior surface of the thigh) lateral to the cloaca). No specimen from the Villavicencio region in the ICN collection corresponds to this species but Taran Grant (pers. comm.) has seen records from the Serranía de la Macarena.

Colostethus juani

This species is common in the altered forest fragments immediately adjacent to Villavicencio and its airport. This observation may mean that the species is sufficiently plastic to tolerate human intervention so long as the intervention does not destroy completely the forests. Its toes are unwebbed and it lacks an oblique lateral stripe. A description is available in Morales (1994) and another in Cochran & Goin (1970), the latter under the name *C. brunneus.*

Colostethus palmatus

This species is well-known biologically (Lüddeke, 2000) from the eastern Andean slope in Cundinamarca but there are populations in the immediate vicinity of Villavicencio (Bosque de Bavaria). Additionally, there are populations assigned tentatively to this species from the other slope of the Cordillera Oriental as well as in wetter parts of the valley of the Rio Magdalena and the Cordillera Central and most northern parts of the Cordillera Occidental. The description by Cochran & Goin (1970) is detailed. This is the only dendrobatid in the region having extensive webbing of the hindfoot. The species is quite sensitive to habitat modifications by man--for many years the populations along the Bogotá—Villavicencio road were silent (extinct?) until the new road was constructed. Then, the species returned to the surviving fragments of the old road. This species is easily recognized in the area for its size and the obvious toe webbing. Its tadpole is large and lacks a pattern.

Colostethus ranoides

This species was described from Villavicencio and the holotype resides in the British Museum (Silverstone, 1971). As described, it has an oblique lateral stripe from the eye to the groin and lacks toe webbing. Nonetheless, in spite of many fieldtrips by the ICN to the Villavicencio region, the species has not reappeared in modern collections. For this reason (actually, negative evidence, which is not evidence of anything), Acosta & Rueda Almonacid (2004) took the position that the species has suffered catastrophic declines and is in urgent need of legal protection. The other two *Colostethus* remain abundant in the region (in the appropriate microhabitat), so perhaps, this species has been exterminated, inadvertently.

Epipedobates femoralis

Cochran & Goin (1970) reported this species from the wetter parts of the piedmont along the eastern base of the Cordillera Oriental. Their description and that of Silverstone (1976) allow ready recognition of this colorful dendrobatid. Unlike *E. hahneli, E. femoralis* lacks the pale spot on the underside of the shank (below the knee). *Epipedobates femoralis* is larger (SVL 20-31.5 mm) than *E. hahneli* (16.5-25.5 mm). These are active daytime frogs, being seen hopping in the leaf litter, especially during, or the day following, rains.

Epipedobates hahneli

Cochran & Goin (1970) reported the species from the foothills associated with the Macarena massif and provide an acceptable description as did Silverstone (1976). As is the case with most dendrobatids, the distribution of this species closely parallels regions where precipitation exceeds evapotransporation. Another factor perhaps explaining the spotty distribution of *E. hahneli* in Colombia is that the species appears to exist as local demes, being absent in some sections of the contiguous rainforest and present in others.

Family Hylidae

This is an important family of the lowlands of South America—three of the four subfamilies occur in the continent (Duellman, 2001) and most employ reproductive strategies (aquatic tadpoles) that render them more or less immune to the exigencies of a prolonged dry season. The subfamily Hemiphractinae does not occur below 1000 m in this sector but can be found on the Andean slopes above Villavicencio. At Villavicencio, the subfamily Phyllomedusinae is poorly represented (*Phyllomedusa*) living in the margins whereas the subfamily Hylinae is well-represented. Such “familiar” genera as *Hyla* and *Phrynohyas* have “disappeared with the new classification proposed by Faviovich et al. (2005).

Dendropsophus brevifrons

This small species of the *D. parviceps* group reaches its northernmost distribution in the Villavicencio region. The description by Duellman & Crump (1974) is detailed. Based on my work in the Leticia area, where the species is abundant, I (Lynch, 2005) classified this as a canopy species, which if true, explains why so few records exist.

Dendropsophus mathiassoni

Cochran & Goin (1970) provide a detailed original description. Adults are very similar to *D. microcephalus,* a species found west of the Andes and some observers have confused the two species (i.e., Stebbins & Hendrickson, 1959). They have different calls and the tadpoles are easily distinguished. This frog appears to require open situations and accordingly is very common in the transformed habitats along the piedmont.

Dendropsophus minutus

Cochran & Goin (1970) provide a detailed description. There is some question as to what to call these populations. The species is very widely distributed across Amazonian South America and Kaplan (1994) suggested that there was more than one species involved. In the Villavicencio region, this small tree frog with notable white line above its vent is common at pools in pasturelands as well as in pools at the pasture-forest interface. The species breeds in ponds and calls from shrubs.

Hypsiboas boans

Detailed descriptions of the species are available in Cochran & Goin (1970) and Duellman (1970, 2001). The distribution in Colombia was summarized (including all available records) by Lynch & Suárez Mayorga (2001). This is a species breeding in the dry season and using nests constructed by the adult on the mudflats or sandbars of streams and rivers. The species requires forests but is apparently content in gallery forests. Males call from trees but descend to ground-level to construct their nests (and call from ground-level as well).

Hypsiboas crepitans

Detailed descriptions of the species are available in Cochran & Goin (1970) and Duellman (1970, 2001). The distribution in Colombia was summarized (including all available records) by Lynch & Suárez Mayorga (2001). This species breeds in the wet season and uses (around Villavicencio) ponds and puddles, calling from the ground. The species is very adaptable and lives well in the modified pastures.

Hypsiboas lanciformis

Cochran & Goin (1970) provide a detailed description. The species is very adaptable and occurs commonly in sites of severe intervention (it is more rarely observed in native forests). Adults breed in ponds and call from bushes.

Hypsiboas punctatus

Cochran & Goin (1970) provide a detailed description. This species is widely distributed in western Amazonia and seemingly as content in pasturelands near Villavicencio as in natural habitats near Leticia—if anything, it appears to be more common in areas of human intervention. Breeding occurs in ponds and marshes. At night, these frogs call from the ground and show a red coloration dorsally—by day, the same frogs are green above with red spots and a dorsolateral line (red below and yellow above).

***Osteocephalus carri* New combination**

This species is more common on the Andean slopes than in the lowlands but I (and others) have found it to about 700 m in the Acacias-Villavicencio region. By the literature, it is now called *Osteocephalus buckley* (Trueb & Duellman, 1971) but that synonymy was in error (Karl Jungfer, pers. comm.). I detected the error by study of tadpoles (which differ morphologically and in coloration from those of *O. buckleyi*) but those results have not been published nor has Jungfer's validation of the correct name. This species breeds in sluggish streams and requires some measure of native forest. The only available description is that of *Hyla carri* by Cochran & Goin (1970).

Osteocephalus taurinus

This is a species more typical of the wet rainforests but some records are available from marginal habitats near Leticia. The description by Cochran & Goin (1970) is adequate as is that by Trueb & Duellman (1971) although the latter authors confused several species under this name (three of which live in Colombia). In the Villavicencio region, it is known from gallery forests.

Phyllomedusa hypocondrialis

Cochran & Goin (1970) provide a detailed description. This is a common frog in open sites across northeastern Colombia and is common as well in the pasturelands of western Meta. Adults breed in ponds and encase the eggs in a purse made from leaves suspended over the pond.

Pseudis paradoxa

Cochran & Goin (1970) provide a detailed description of the subspecies found in the Caribbean lowlands—aside from minor differences in color pattern, that description will suffice for samples from the eastern llanos. That subspecies is found throughout the open lowlands of eastern Colombia but the frog is rarely seen because they are shy and aquatic. Breeding occurs in these same ponds and adults aestivate in the soil during the dry season. The tadpoles achieve large sizes in comparison with the adults—hence the trivial name.

Scinax blairi

This species, described by Fouquette & Pyburn (1972) from Guaviare, is present in the Villavivencio region. The available records suggest that the species is rare but I suspect that collectors may have confused it with the very common *S. ruber,* and neglected to collect it relative to its abundance. All species of this genus are peculiar because the webbing between the first and second toe of the foot is reduced strongly.

Scinax rostratus

A description is available in Duellman (1970). This species is widely distributed in the lowlands of northern and northeastern Colombia but seems incapable of penetrating the forests to the south (there, it is replaced by the Amazonian *S. garbei*). This is a common species during the wet season and males can be found perched upon tree trunks (head down) calling. Tadpoles are of the pond-type.

Scinax ruber

Cochran & Goin (1970) provide a description. Most people working with lowland South American frogs agree that this is a species complex. In the Villavicencio region, it (or they) is a common frog, especially near human habitations, easily recognized by the black and yellow marbling on the concealed surfaces of the thighs. Breeding occurs in ponds and puddles. It is probable that we are confusing *S. ruber* with *S. x-signatus* in the Villavicencio region.

Scinax wandae

Pyburn and Fouquette (1971) named and described this small species of *Scinax* from the western edge of the Llanos. This is a very common tree frog in ponds in pastures near Villavicencio and its buzz-like call is likely to be mistaken as the call of some insect. The species breeds in ponds in open situations and avoids forests.

Scinax x-signatus

This species is very similar to *S. ruber* but appears to be present in the region, based on collections of tadpoles.

Sphaenorhynchus lacteus

Cochran & Goin (1970) provide a detailed description of this atypical species of the Villavicencio region (entering only to the SE of the city)-it is more commonly found in floating meadows in Amazonas but occurs as far north as Guainia (Pto. Inirida). Adults breed in pond-type situations but require floating vegetation.

Trachycephalus venulosus

Cochran & Goin (1970) provide a detailed description. This is a common species in lowland Colombia but its obviousness depends upon its breeding season. Normally, it is an occupant of the canopy but descends to ground level to breed at ponds. The warty skin and the habit of producing a sticky *leche* enable rapid recognition.

Family Leptodactylidae

This is the largest family of frogs and toads in Colombia (and in South America). At present, it is divided into five subfamilies (Frost “2004”), only two of which are represented in this seasonally dry region. The Eleutherodactylinae (or, currently, Brachycephalinae) shares an aversion to dry seasons with the dendrobatids and is poorly represented (a maximum of three species, only one of which might be termed common). The remaining species are of the subfamily Leptodactylinae, most sharing an adaptation (foam nests) that reduces their sensitivity of dry conditions.

Adenomera hylaedactyla

This small terrestrial leptodactyline is easily confused with juvenile *Leptodactylus* but is generally recognizable due to the pale vertebral stripe on the posterior one-half of the body. Records are few from the region suggesting that this region is near the northern limit of distribution for the species along the piedmont.

Eleutherodactylus frater

This species was described from the Andean slopes above Villavicencio (Werner, 1899) and is common on these slopes. Pyburn & Lynch (1981) re-described it based on material from the Serranía de la Macarena. The species was reported as *E. marmoratus* by Stebbins & Hendrickson (1959) from just above Villavicencio.

Eleutherodactylus medemi

Lynch (1994) provided a detailed description of this species which lives in the wettest habitat in the Villavicencio region (accordingly, most records are for the lowest Andean slopes just above the lowlands. When the forest has been cleared (as is common in this part of Colombia, this species disappears).

Eleutherodactylus savagei

This species was first described from the foothills of the Serranía de la Macarena (Pyburn & Lynch, 1981) but subsequently found to occupy the eastern Andean slopes of the Cordillera Oriental, where it is more common, rarely descending below 1000 m (Lynch, 1994).

Leptodactylus colombiensis

This species was associated with Andean habitats, to more than 2000 m (Heyer, 1994, who provides a description). Nonetheless, the species appears to be relatively common in the lowlands associated with Villavicencio and there is even a record in eastern Casanare. This is one of two species for the region with obvious fringes on the toes and in which the males have two thumb spines.

Leptodactylus fuscus

This is a common species of open habitats in lowland Colombia (both in the Llanos and the Caribbean lowlands). For descriptions, see Cochran & Goin (1970) and Heyer (1978). A terrestrial frog usually found by day beneath cover. Males build a shallow cavern to receive the eggs (housed in a foam nest) which floods following rains, liberating the tadpoles into shallow ponds in pastures. This is one of two species in the region lacking lateral fringes on the toes and having a pale stripe on the posterior surface of the thighs (also seen in *L. mystaceus*).

Leptodactylus insularum

Cochran & Goin (1970) provide a description but appear to have confused *L. bolivianus* and *L. insularum* (but their description is based on an individual of *L. insularum*). I employ the taxonomy of W. R. Heyer who has examined the ICN collections and tells me that *L. bolivianus,* in Colombia, is known only from the Leticia region. This is a medium-sized *Leptodactylus* with a single pair of dorsolateral folds, lateral fringes on the toes, and a pale mark on the upper lip. Males have two black nuptial spines. The species seems equally at home in open habitats and in forests suffering human intervention. Breeding occurs in ponds with a floating foam nest attended by the female.

Leptodactylus knudseni

Adults are difficult to identify on morphological grounds (Heyer, 1979). Heyer (1979) provides a description. This is the largest *Leptodactylus* from the Villavicencio region. Historically, a frog called *L. pentadactylus* was imagined to occupy most wet lowlands of northern South America (Lynch, 1979) but recent work has established that this was a species complex. This species is widely distributed in the lowlands of Amazonia and in the Villavicencio region occurs in the wetter parts of the habitat (in gallery forests or the piedmont). Adults conceal themselves in burrows in the forest but seem prone to emerge especially during heavy rains.

Leptodactylus mystaceus

This is another species of the *fuscus* group found in the region and unlike the other has one pair of dorsolateral folds (thus resembling juvenile *L. insularum* but *L. insularum* has lateral fringes on the toes). This species is rare in the region, perhaps at its northern limit of distribution.

Lithodytes lineatus

Cochran & Goin (1970) provide a description. This species is widely distributed in Amazonas but whose distribution seems closely associated with the Andes (Lynch, 1979). In the Villavicencio region, the species is confined to habitats with a minimum of human intervention and the species is closely associated with nests of the ant genus *Atta.* That said, the species is commonly found under tree trunks in cleared pastures. In eastern Colombia, the species extends north along the piedmont to Venezuela and is widely distributed in forested regions.

Physalaemus enesefae

Cochran & Goin (1970) provide a description but under the name of *Physalaemus cuvieri dunni.* The *vaquero* is a familiar sound after dark in the western llanos. These frogs call from ground level, at the border of puddles and ponds, largely hidden in the grass. Their distinctive call belies the fact that these are small frogs. They appear to be restricted to open habitats--accordingly, they adapt well to human intervention. As is the case with other species of the genus, adults produce a foam-nest which resists desiccation.

Pseudopaludicola boliviana

This is the smallest species of frog to be found in the Villavicencio region (adults do not reach 20 mm SVL) but is common (if easily overlooked) near ponds and puddles in the grasslands. Elsewhere in eastern Colombia, the species seems more at ease in forested situations (Lynch, 1989, Lynch & Vargas, 2000). Although classified as a leptodactyline, frogs of this genus do not produce foam-nests, rather depositing their eggs in ponds and puddles.

To the east of Villavicencio, one finds *P. llanera,* a slightly larger frog found in open habitats (Lynch, 1989, who provides a description). The two appear to be sympatric in eastern Guainia (Lynch & Vargas, 2000).

Family Microhylidae

This is one of the species-poor families found primarily in the lowlands in Colombia (Lynch, 1998). A single species is known for the Villavicencio region although *Ctenophryne geayi* should be expected along the piedmont (its type-locality is near the Colombia—Venezuela border and the species is widely distributed in the Amazon Basin).

Ctenophryne geayi

Although this species has not been collected in the Villavicencio region, I include it within the expected fauna. The ICN has records from Caquetá and the Leticia region and the type-locality lies in the piedmont near the Venezuelan border—hence, the species probably occupies the piedmont in eastern Colombia. Burrowing microhylids are not regularly captured during fieldwork, perhaps because collectors find their gaze oriented toward the understory plants or to the surface and vegetation around ponds.

Elachistocleis ovale

This is a common frog (normally found by searching beneath logs) in pastures (both as adults and as tadpoles). The tadpole is a filter-feeder--accordingly, tadpoles are found in ponds (never streams).

Family Pipidae

Pipa pipa

This widely distributed frog of the Amazon Basin is seldom encountered except by deliberate searching. The ICN material was purchased from fishermen in Puerto López and thus probably comes from the Río Metica or small streams entering it.

Family Ranidae

This is a poorly-represented family in the country. Those who subscribe to biogeography fables (stories) assure us that the family is a recent (late Pliocene or Pleistocene) invader of South America—what seems certain is that there are only three native species (Hillis &

de Sá, 1988). One occupies the Amazon Basin and can be found at Villavicencio—the others are trans-Andean. All preserved records in Colombian museums were reported by Acosta (2000). A third species (*Rana catesbeiana*) was unfortunately introduced into Colombia in the early 1990s—to date, it remains a plague in the interandean valleys.

Rana palmipes

This species occupies an immense distribution east of the Andes (Acosta, 2000a). Adults are very closely associated with streams and rivers of low-gradients. The species occupies ponds as well. No new records are available beyond those reported by Acosta (2000a).

DISCUSSION

The known (and anticipated) amphibian fauna of the Villavicencio region consists of one salamander, three caecilians, and 45 (or 46 if *Epipedobates hahneli* is to be included) frog (and toad) species. If the region is expanded to the south (so as to include the wet forested lowlands to the east, southeast and west of the Serranía de la Macarena, many more "Amazonian" species of frogs enter the fauna.

There is a suite of 16 very common frog and toad species, all confined to lowland situations and all occupying open and transformed habitats. Some of these also occur in forested situations where they are less abundant: *Bufo granulosus, B. marinus, Dendropsophus mathiassoni, D. minutus, Elachistocleis ovale, Hypsiboas crepitans, H. lanciformis, H. punctatus, Leptodactylus fuscus, Phyllomedusa hypocondrialis, Physalaemus enesefae, Pseudis paradoxa, Pseudopaludicola boliviana, Scinax rostratus, S. ruber,* and *S. wandae.* This entire suite, perhaps with the exception of *Pseudis paradoxa,* can be collected/ observed at any locality of the region during the wet season. Two other species are apparently uncommon species of this suite (*Scinax blairi* and *S. x-signatus*), at least around Villavicencio. Of this group of 18 species, the best-collected municipalities of Meta are Acacias, Cubarral, Restrepo, and Villavicencio (with 16, 15, 13, and 17 species, respectively, vouchered in the ICN).

There is second set of lowland species usually requiring much more mesic environments (forests). These species are also less frequently encountered, consisting of three caecilians, one salamander, and 19 (or 20) frogs and toads: *Potomotyphlus kaupii, Siphonops annulatus, Typhlonectes compressicauda; Bolitoglossa altamazonica; Adenomera hylaedactyla, Cochranella flavopunctata, Colostethus juani, Ctenophryne geayi* (expected, not known), *Dendrophryniscus minutus, Dendropsophus brevifrons, Eleutherodactylus medemi, Epipedobates femoralis, E. hahneli* (assigned with doubt to the Villavicencio region, see below), *Hyalinobatrachium munozorum, Hypsiboas boans, Leptodactylus colombiensis, L. insularum, L. knudseni, L. mystaceus, Lithodytes lineatus, Osteocephalus taurinus, Rana palmipes, Sphaenorhynchus lacteus,* and *Trachycephalus venulosus.* At least in the Villavicencio region, the *Adenomera, Epipedobates,* and certain *Leptodactylus* are quite rare frogs, perhaps at or near the northern extreme of their distributions. Only three municipalities (of Meta) have substantial collections of these species (Acacias, Restrepo, and Villavicencio) with nine, nine, and twelve species, respectively, vouchered in the ICN collections.

The third component of this local fauna consists of seven species normally occupying the eastern slopes of the Cordillera Oriental but having some locality records below 1000 m: *Bufo glaberrimus, B. "typhonius," Colostethus palmatus, Eleutherodactylus frater, E. savagei, Leptodactylus colombiensis,* and *Osteocephalus carri.* The only species not assigned to any component is the possibly extinct *Colostethus ranoides.*

Biogeographically, the Serranía de la Macarena is merely an isolated spur of the Cordillera Oriental although many biologists prefer to view (or to imagine) it as the westernmost of the Guayanan *tepuis*. Some frog collections have been made along the base of the Serranía and provide a strikingly different local fauna than that discussed here. Cochran & Goin (1970) reported the enigmatic microhylid *Otophryne* and in the ICN collection there are specimens of the Amazonian *Hypsiboas geographicus.* In the photographic vouchers of some undergraduates from the Universidad de Los Andes (photographs taken at the primatology station on the Río Duda), I was able to identify *Chiasmocleis bassleri, Hypsiboas calcaratus, Phyllomedusa tarsius,* and *P. tomopterna,* Amazonian species at their northernmost limits of distribution along the piedmont. This is probably the best explanation for the records of *Epipedobates hahneli* as well.

If the frog fauna of the Villavicencio region is calculated as 45 species, represented the eight recognized families, what is notable is the unequal distribution of taxa among families (the Centrolenidae, Microhylidae, Pipidae, and Ranidae are very poorly represented [each 2—4% of the fauna] and the Bufonidae and Dendrobatidae only slightly better [each 9—11% of the fauna] whereas the Leptodactylidae [27%] and Hylidae [40%] are well represented). In part, this distribution parallels the relative richnesses of each family for Colombia and for the continent but there are some departures. Lynch (1998) argued that five families were diverse within Colombia (Bufonidae, Centrolenidae, Dendrobatidae, Hylidae, and Leptodactylidae) and that remains the case (Acosta's [2000b] listing yields 10%, 11%, 11%, 23% and 41%, respectively of the country's frog fauna in these five families) . However, the diversities of four of these (all except Hylidae) are embedded in the Andean fauna. In the case of the leptodactylids, *Eleutherodactylus* (and its generic relatives) is predominantly Andean and the subfamily Leptodactylinae is predominantly lowland. The fauna in the Villavicencio region partially reflects these generalizations (the Hylidae and Leptodactylidae are dominant) but the order of importance of the two dominant families is reversed (hylids are "enriched" and leptodactylids are "impoverished" in the Villavicencio fauna). This enrichment and impoverishment are certainly a consequence of the relative "dryness" (not in terms of gross precipitation but rather its distribution across the year) of the Villavicencio Region reducing the likelihood of survivorship for reproductive modes requiring continuous wet conditions. Amphibians with direct development (eleutherodactyline leptodactylids and plethodontid salamanders fare especially badly) as do centrolenids and dendrobatids.

ACKNOWLEDGMENTS

Andrés Acosta was generous with his unpublished results of his study of *Bolitoglossa* and Natalia Carrillo, David Sánchez, and Adriana Téllez aided me in checking databanks of the Instituto. I have benefited from discussions with colleagues (Taran Grant, W. Ronald Heyer, Karl Jungfer) concerning some taxonomic problems associated with this local fauna. My fieldwork in the region, off and on during the past 38 years, profited from the collaboration of Cristina Ardila, Taran Grant, Federico Medem (q.e.p.d.), Juan Renjifo, Pedro M. Ruiz (q.e.p.d.), and David Sánchez.

LITERATURE CITED

Acosta, A. R. 2000a. Distribución, variación y estatus taxonómico de las poblaciones del complejo *Rana palmipes* (Amphibia: Anura: Ranidae) en Colombia. Rev. Acad. Colomb. Cienc. Ex. Fís. Nat. 23 (suplemento): 215-224.

Acosta, A. R. 2000b. Ranas, salamandras y caecilias (Tetrapoda: Amphibia) de Colombia/ Frogs, salamanders, and caecilians (Tetrapoda: Amphibia) of Colombia. Biota Colombiana 1: 289-319.

Acosta, A. R. & J. V. Rueda Almonacid. 2004. Rana saltona de Villavicencio/ *Colostethus ranoides,* pp. 147-150, In Rueda Almonacid, J. V., J. D. Lynch & A. Amezquita (Eds.), Libro Rojo de los Anfibios de Colombia. Serie Libros Rojos de Especies Amenazadas de Colombia. Conservación Internacional—Colombia, Instituto de Ciencias Naturales—Universidad Nacional de Colombia, Ministerio del Medio Ambiente. Bogotá. 384 pp.

Andersson, L. G. 1945. Batrachians from east Ecuador collected 1937, 1938 by Wm. Clarke-Macintyre and Rolf Blomberg. Arkiv för Zoologi 37A (2): 1-88.

Anon. 1996. Opinion 1830. Caeciliidae Kolbe, 1880 (Insecta, Psocoptera): Spelling emended to Caeciliusidae, so removing the homonymy with Caeciliidae Rafinesque, 1814 (Amphibia, Gymnophiona). Bulletin of Zoological Nomenclature 53: 68-69.

Ardila Robayo, M. C. & P. M. Ruiz Carranza. 1997. Herpetología (Anfibios/ Reptiles), pp. 255-264, In Zonificación Ambiental para el Plan Modelo Colombo—Brasilero (Eje Apaporis—Tabatinga: PAT). Instituto Geográfico Agustín Codazzi.

Brame, A. H. & D. B. Wake. 1963. The salamanders of South America. Los Angeles County Museum of Natural History, Contributions in Science (69): 1-72.

Cochran, D. M. & C. J. Goin. 1970. Frogs of Colombia. United States National Museum, Bulletin (288): 1-655.

Duellman, W. E. 1970. The Hylid Frogs of Middle America. Museum of Natural History, The University of Kansas, Monograph (1): xi + 753 pp, 72 plates.

Duellman, W. E. 1978. The Biology of an Equatorial Herpetofauna. Univ. Kansas, Mus. Nat. Hist., Misc. Publ. (65): 1-352.

Duellman, W. E. 2001. Hylid Frogs of Middle America. Society for the Study of Amphibians and Reptiles. 1159 pp.

Duellman, W. E. & M. L. Crump. 1974. Speciation in frogs of the *Hyla parviceps* group in the upper Amazon Basin. Occasional Papers of the Museum of Natural History, the University of Kansas (23): 1-40.

Faviovich, J., C. F. B. Haddad, P. C. A. Garcia, D. R. Frost, J. A. Campbell, & W. C. Wheeler. 2005. Systematic review of the frog family Hylidae, with special reference to Hylinae: phylogenetic analysis and taxonomic revision. Bulletin of the American Museum of Natural History (294): 1-240.

Fouquette, M. J. & W. F. Pyburn. 1972. A new Colombian treefrog of the *Hyla rubra* complex. Herpetologica 28: 176-181.

Frost, D. R. 2004. Amphibian Species of the World: an online reference. Version 3.0. Electronic database available at http://research.amnh.org/herpetology/amphibia/index.html. New York: American Museum of Natural History.

Heyer, W. R. 1978. Systematics of the *fuscus* group of the frog genus *Leptodactylus* (Amphibia, Leptodactylidae). Natural History Museum of Los Angeles County, Science Bulletin (29): 1-85.

Heyer, W. R. 1979. Systematics of the *pentadactylus* group of the frog genus *Leptodactylus* (Amphibia: Leptodactylidae). Smithsonian Contributions to Zoology (301): 1-43.

Heyer, W. R. 1994. Variation within the *Leptodactylus podicipinus—wagneri* complex of frogs (Amphibia: Leptodactylidae). Smithsonian Contributions to Zoology (546): 1-124.

Hillis, D. M. & R. de Sá. 1988. Phylogeny and taxonomy of the *Rana palmipes* group (Salientia: Ranidae). Herpetological Monographs (2): 1-26.

Kaplan, M. 1994. A new species of frog of the genus *Hyla* from the Cordillera Oriental in northern Colombia with comments on the taxonomy of *Hyla minuta.* Journal of Herpetology 28: 79-87.

Lüddecke, H. 2000. Behavioural aspects of the reproductive biology of the Andean frog *Colostethus palmatus.* Rev. Acad. Colomb. Cienc. Ex. Fís. Nat. 23 (suplemento): 303-316.

Lynch, J. D. 1979. The amphibians of the lowland tropical forests, pp. 189-215, In Duellman, W. E. (Ed.), The South American Herpetofauna: Its Origen, Evolution, and Dispersal. Museum of Natural History, The University of Kansas, Monogr. (7).

Lynch, J. D. 1989. A review of the leptodactylid frog genus *Pseudopaludicola* in northern South America. Copeia 1989: 577-588.

Lynch, J. D. 1994. Two new species of the *Eleutherodactylus conspicillatus* group (Amphibia: Leptodactylidae) from the Cordillera Oriental of Colombia. Rev. Acad. Colomb. Cienc. Ex. Fís. Nat. 19: 187-193.

Lynch, J. D. 1998. La riqueza de la fauna anfibia de los Andes colombianos. Innovación y Ciencia 7 (4): 46-51.

Lynch, J. D. 2000. Una aproximación a las culebras ciegas de Colombia (Amphibia: Gymnophiona). Rev. Acad. Colomb. Cienc. Ex. Fís. Nat. 23 (suplemento): 317-338.

Lynch, J. D. 2005. Discovery of the richest frog fauna in the World—an exploration of the forests to the north of Leticia. Rev. Acad. Colomb. Cienc. Ex. Fís. Nat. 29: 000-000.

Lynch, J. D. & W. E. Duellman. 1973. A review of the centrolenid frogs of Ecuador, with descriptions of new species. Occasional Papers of the Museum of Natural History, The University of Kansas (16): 1-66.

Lynch, J. D. & Á. M. Suárez Mayorga. 2001. The distributions of the gladiador frogs (*Hyla boans* group) in Colombia, with comments on size variation and sympatry. Caldasia 23: 491-507.

Lynch, J. D. & M. A. Vargas Ramírez. 2000. Lista preliminar de especies de anuros del Departamento de Guainía, Colombia. Rev. Acad. Colomb. Cienc. Ex. Fís. Nat. 24: 579-589.

Morales, V. R. 1994. Taxonomía sobre algunos *Colostethus* (Anura: Dendrobatidae) de Suramérica, con descripción de dos especies nuevas. Revista Española de Herpetología 8: 95-103.

Morales, V. R. 2002. [“2000”]. Sistemática y biogeografía del grupo *trilineatus* (Amphibia, Anura, Dendrobatidae, *Colostethus*), con descripción de once nuevas especies. Publicaciones de la Asociación de Amigos de Doñana (13): 1-59.

Pyburn, W. F. 1973. A new hylid frog from the Llanos of Colombia. Journal of Herpetology 7: 297-301.

Pyburn, W. F. & M. J. Fouquette. 1971. A new striped treefrog from central Colombia. Journal of Herpetology 5: 97-101.

Pyburn, W. F. & J. D. Lynch. 1981. Two little-known species of *Eleutherodactylus* (Amphibia: Leptodactylidae) from the Sierra de la Macarena, Colombia. Proceedings of the Biological Society of Washington 94: 404-412.

Ruiz Carranza, P. M., M. C. Ardila Robayo & J. D. Lynch. 1996. Lista actualizada de la fauna Amphibia de Colombia. Rev. Acad. Colomb. Cienc. Ex., Fís. Nat. 20: 365-415.

Ruiz Carranza, P. M. & J. D. Lynch. 1998. Ranas Centrolenidae de Colombia XI. Nuevas especies de las ranas de cristal, género *Hyalinobatrachium.* Rev. Acad. Colomb. Cienc. Ex., Fís. Nat. 22: 571-586.

Silverstone, P. A. 1971. Status of certain frogs of the genus *Colostethus* with descriptions of new species. Los Angeles County Museum Contributions in Science (215): 1-8.

Silverstone, P. A. 1976. A revision of the poison-arrow frogs of the genus *Phyllobates* Bibron *in* Sagra (family Dendrobatidae). Natural History Museum of Los Angeles County, Science Bulletin (27): 1-53.

Stebbins, R. C. & J. R. Hendrickson. 1959. Field studies of amphibians in Colombia, South America. University of California Publications in Zoology 56: 497-540.

Suárez Mayorga, Á. M. 2000. Lista preliminar de la fauna Amphibia presente en el transecto La Montañita-Alto de Gabinete, Caquetá, Colombia. Rev. Acad. Colomb. Cienc. Ex. Fís. Nat. 23 (suplemento): 395-405.

Taylor, E. H. 1968. The Caecilians of the World. University of Kansas Press, Lawrence. Xiv + 848 pp.

Trueb, L. & W. E. Duellman. 1971. A synopsis of Neotropical hylid frogs, genus *Osteocephalus*. Occasional Papers of the Museum of Natural Hiustory, The University of Kansas (1): 1-47.

Vélez, C. 1995. Estudio taxonómico del grupo *Bufo typhonius* (Amphibia, Anura, Bufonidae) en Colombia. Unpublished undergraduate thesis, Universidad Nacional de Colombia.

Vélez Rodríguez, C. M. 2000. Presencia de *Bufo sternosignatus* Günther 1859 (Amphibia: Anura: Bufonidae) en Colombia. Rev. Acad. Colomb. Cienc. Ex. Fís. Nat. 23 (suplemento): 411-416.

Recibido: 09/11/2005
Aceptado: 02/05/2006

Appendix (Specimens examined)

This includes all specimens examined with the exception of records published by Acosta (2000a), Lynch (2000), and Lynch & Suárez Mayorga (2001), which need not be repeated, so as to document this fauna and reduce the likelihood of unnecessary additional collections.

ANUROS

Familia Bufonidae

Bufo glaberrimus. **Cundinamarca**: Guayabetal, (ICN 2613), carretera Bogotá—Villavicencio, debajo de Guayabetal (ICN 4055-56); Medina (ICN 14643-44). **Meta**: [along border of the municipios El Castillo and Lejanías]: Guapi (= Guape?) (ICN 2798-99); Acacias: Km 12 Guayabetal—Manzanares, 1470 m (ICN 9732-38), vereda La Esmeralda: fincas al lado de la petrolera, 500 m (ICN 49629, tadpoles), vereda San Juania, Río Cola de Pato, 850 m (ICN 14142-49); Restrepo, Salinas, Alto de Río Upín (ICN 2873-81, 4774-75, 4840, 4854-55, 4943, 4965, 4967, 4994-5004, 5093, 17299-300, 21221-22); Villavicencio, Km 13 Villavicencio—Acacias, Hacienda Las Brisas (ICN 20524-27).

Bufo granulosus. **Arauca**: Arauquita, Estación Cravo Norte (ICN 3395-97), campamento El Limonar (ICN 27293-94), Caño Limón, sector Caño Limón 7 (ICN 27839-47), sector Relleno Sanitario (ICN 27835), carretera a Matanegra (ICN 27292), via Matanegra-Yarumal 2, Yarumal 2 (ICN 27290-91), sector Yuca 16 y Yuca 41 (ICN 27836-38), estero Yuca 30 (ICN 27295), sector vivero (ICN , 27697, 27848). **Casanare**: Hato Corozal: Caserio Mochuelo, Río Casanare (ICN 3434-37). **Guaviare**: San José de Guaviare (ICN 161-68). **Meta**: Acacias: casco urbano (ICN 39459), vereda Alto Acaciitas, quebrada Caño Negro, 880 m (ICN 39463), vereda Alto San Juan, quebrada Borrachero, 1000 m (ICN 39460-62), vereda La Esmeralda, centro Agroturistico Araguaney, 514 m (ICN 49364-68), vereda Llano Grande, 730 m (ICN 14130-33), vereda San José, Río Acacias, 670 m (ICN 14129, 14137); Cubarral: El Dorado (ICN 39453-54, 39470); Cumaral: vereda La Balastrera, Hda Altamira, Caño Atascosa, 540 m (ICN 36336), vereda Presentado, Hda Altamira, Km 11 E Cumaral, 550 m (ICN 20664, 21302-08); Guamal: Hda Avichure, Km 7 carretera a Campo Castilla, 550 m (ICN 14138); Puerto López: finca El Dorado (ICN 31445-48, 31450-51), vereda Menegua, sitio El Lagunazo (ICN 26279-80); San Martín: vereda Baja Humadea, Caño Rubiano, 490 m (ICN 194-96); Villavicencio, casco urbano (ICN 2344-46, 20617, 31381, 35904), alrededores del casco urbano (ICN 2629-31), Km 2 a Cumaral, Km 9.7 a San Nicolás (ICN 36261, 36275), Km 6-7, carr. V/cio—Acacias, vereda Montecamo (ICN 14134-35), Km 13 carr. V/cio—Acacias, Hda. Las Brisas (ICN 20499), vereda Vanguardia, quebrada Pozo Azul, 540-640 m (ICN 36337-39, 52561-69); Vista Hermosa: La Macarena (ICN 2926-27, 2930-35).

Bufo marinus. **Arauca**: Arauquita, Estación Cravo Norte (Oxy Colombia), Caño Limon, sector Yuca 21 (ICN 26847-48, 27282-87), sector Yuca 26 (ICN 26845-46, 26851), Caño Matanegra (ICN 26849-50, 27288-89), sector Caño Verde 1 (ICN 27849), sector Relleno Sanitario (ICN 27280-81), via Matanegra, Yarumal 2 (ICN 27277, 27279. **Boyacá**: Santa María de Chivor, vereda Caño Grande, Quebrada La Cristalina, 900 m (ICN 40720, 44770, 45152-58), vereda Caño Negro (ICN 44771), vereda Caño Negro, finca El Tesoro, caño Tigre, 1750 m (ICN 49838). **Meta**: Acacias, vereda Guayuribo, escuela Alto Guayuribo, 565 m (ICN 39838), vereda La Esmeralda, finca Campo Alegre, 514 m (ICN 49369), vereda Llano Grande, 730 m (ICN 14196), vereda San José, Colegio Nacional Agropecuario Acacias, 670 m (ICN 14194), ± 8-9 Km por

carratera antigua Acacias—Guamal (ICN 14195), vereda Vista Hermosa, Km 20 carretera alterna al Llano, 1000 m (ICN 39839); Cubarral, El Dorado (ICN 39509); Fuente de Oro, Inspección de Policia Puerto Limón, Caño Iraca (ICN 26852-53); Puerto López, Hacienda Mozambique (ICN 31374-76), Km 51, carretera Puerto López—Puerto Gaitán, 480 m (ICN 45489), Menegua (ICN 2321-23, 2325); Restrepo, Salinas del Alto Río Upín (ICN 2837); San Martín, vereda Humadía, caño Rubiano, 490 m (ICN 198-200); Villavicencio, (ICN 33385), centro urbano (ICN 2313), Km 5-6, via Puerto López, finca Santa Ana, 550 m (ICN 45460-63), Km 18 carretera Villavicencio—Puerto López (ICN 45488), vereda Vanguardia, quebrada Pozo Azul (ICN 17303-05, 23139-40, 52553-60); Vista Hermosa: La Macarena (ICN 2966).

Bufo sp (*typhonius* group). **Boyacá**: Pajarito: Corinto, quebrada las Jotas, 1600 m (ICN 5152-56). **Cundinamarca**: Medina: Granja Agrícola, 570 m (ICN 34579-81), vereda Choapal, 6-7 kms NNW Medina, 630 m (ICN 14654-56). **Meta**: Acacias: Portachuelo, 1600 m (ICN 4968); Cumaral: vereda Laguna Negra, ca 5 km via San Nicolás por Cumaral, 580 m (ICN 36343-44); Guamal: Hda Avichure, Km 7 carr. a Campo Castilla, 550 m (ICN 14139-41); Puerto Rico: rapids of Río Cafre (ICN 600); Restrepo: Las Salinas, 720 m (ICN 4969, 5022-24), vereda Alto Caney, bocatoma, 750 m (ICN 36342), vereda Santa Lucía, quebrada del Ortez, 920-930 m (ICN 36345-46), Km 2 carr. Restrepo a Cumaral, Km 9.7 a San Nicolás (ICN 36276); Villavicencio: Caño Seco (ICN 2348), stream above Buenavista (ICN 595), vereda Vanguardia, quebrada Pozo Azul, 540 m (ICN 52484-91); Vista Hermosa (La Macarena): ICN 2922, 2924-25, 2928-29, Caño Cristales (ICN 18319), Piñalito, cabaña Paujiles (ICN 31436, 36982).

Dendrophryniscus minutus. **Meta**: Cubarral: El Dorado (ICN 39504-08); Guamal: Hda Avichure, Km 7 carr. a Campo Castilla, 550 m (ICN 14150-53, 14158).

Familia Centrolenidae

Cochranella flavopunctata. **Boyacá**: Pajarito, Insp. Policia Corinto, finca El Descanso, Qda. La Limonita, 1600-1650 m (ICN 9571-72, 9607). **Caquetá**: Florencia, vereda Santa Elena, 27.5 km arriba de Florencia, 980 m (ICN 24921), vereda Tarqui, 38.8 km arriba de Florencia, 1370 m (ICN 24292). **Meta**: Restrepo, 3 km N Restrepo, río Caney, La Salina, 740 m (ICN 4778, 4942, 5030, 5083, 5094), vereda Alto Caney, 4 km carretera arriba de la estación de Unillanos, 1000-1040 m (ICN 21235-36), vereda Alto Caney, Bocatoma, 740 m (ICN 36277-82); Villavicencio: vereda Vanguardia, quebrada Pozo Azul, 540 m (ICN 52483).

Hyalinobatrachium munozorum. **Meta**: Acacias: vereda Alto de San Juan, Km 18 carr. alterna al Llano, quebrada Borrachero, 1000 m (ICN 39503); Restrepo: 3 km N Restrepo, Salinas del Upín, quebrada La Salina, 740 m (ICN 5031-34).

Familia Dendrobatidae

Colostethus juani. **Cundinamarca**: Medina, ca 1.5 km N Medina, 490 m (ICN 15643). **Meta**: Acacias, vereda Alto Acacias, ± 5 km desvío carretera central Acacias-Guamal, 730-750 m (ICN 14155), vereda San Juania, río Orotoy, 850 m (ICN 14254); Cubarral, El Dorado (ICN 39496); Villavicencio, Caño Parado (ICN 2463-64), Pozo Azul (ICN 42576), 2 km NE Villavicencio, Km 2 carretera Restrepo-Villavicencio, 600 m (ICN 44486-89, 44491-95).

Colostethus palmatus. **Cundinamarca** Medina: Portachuelo (ICN 42574-75). **Meta**: Acacias: Hacienda Puertochuelo, 1560 m (ICN 5025-27); Restrepo: vereda Alto Caney, Bocatoma, 750 m (ICN 36299), 4 kms arriba de la estación, 1000 m (ICN 22458-59); Villavicencio (ICN 1988, 2455); Vista Hermosa: La Macarena (ICN 2978).

Familia Hylidae

Dendropsophus brevifrons. **Meta**: Puerto Limón: ± 10 kms carretera Puerto Limón—Puerto Llerás, desvio carratera a la finca Virginia (ICN 12017-18).

Dendropsophus mathiassoni. **Casanare**: San Luis de Palenque (ICN 2639-42, 2660). **Cundinamarca**: Medina, quebrada Gazaguancito, 573 m (ICN 34593-95). **Meta**: Acacias: vereda Alto Acaiitas, 850 m (ICN 39312-13), vereda La Esmeralda, Centro Agroturistico Araguaney, 514 m (ICN 49393-429); Cubarral: El Dorado (ICN 39464-69); Cumaral, via Veracruz, laguna desvío San Nicolás, 530 m (ICN 39263-88); Puerto Limón: ± Km 10 carretera Puerto Limón—Puerto Lleras, desvío Finca La Virginia (ICN 12020-25); Puerto López: Hacienda Mozambique (ICN 1337); Restrepo, Km 2 a Cumaral, Km 9.7 a San Nicolás (ICN 36245-53, 36270-72, 39291), kms 1-11 a Restrepo, desviación por carretera a San Nicolás (ICN 17323-41), Km 18 carr, Restrepo—Cumaral, desvío a San Nicolás, 600 m (ICN 39290), quebrada San Miguel, afluente del Río Opin (ICN 17342), vereda Alto Caney (ICN 39289); Villavicencio, parte alta Caño Maizazo (ICN 26989), Finca Santa Teresita, 15 km NE Villavicencio (ICN 604, 606-07, 609), quebrada Pozo Azul, Km 7 Villavicencio—Restrepo, 650 m (ICN 13584-86, 39292-94, 52617-749), Km 18 a Puerto López, El Hachón (ICN 38979-80), vereda Las Mercedes, Caño Candelaria, 480 m (ICN 39295-307), Km 8 Villavicencio—Acacias, 580 m (ICN 39309-11).

Dendropsophus minutus. **Boyacá**: Santa María: carretera Santa María—Mámbita, ca Río Guario, 520 m (ICN 44856-68), vereda Cachipay, Alto Calichera, quebrada Montenegro (ICN 40695-700), vereda Culima, carretera a Mámbita (ICN 40690-94). **Cundinamarca**: Ubalá: Mámbita, casco urbano, 820 m (ICN 40883-40901), inspección Mámbita, 520 m (ICN 44869-77). **Meta**: Acacias, vereda La Esmeralda, centro Agroturistico Araguaney, 514 m (ICN 49430-72, 49474-80), finca

Versailles, 514 m (ICN 49473, 49481-84), vereda San Juania, Río Orotoy, 850 m (ICN 24307), vereda Vista Hermosa, Km 20 carr. Alterna al llano (ICN 39474); Cubarral: El Dorado (ICN 39476-78), carretera a San Nicolás por la Estaca (ICN 38976-77); Guamal: Hda. Avichure, Km 7 a Campo Castillo, 550 m (ICN 23087, 23096); Restrepo: vereda La Floresta, Hda. San Nicolás (ICN 21228), vereda San Nicolás, 1-2 km E San Nicolás, Hda. Alcancía, 430 m (ICN 21226); Villavicencio, centro urbano (ICN 20638-41, 20644), quebrada Pozo Azul (ICN 21320, 52590-94), vereda Las Mercedes, 580 m (ICN 39745).

Hypsiboas boans. See Lynch & Vargas (2000).

Hypsiboas crepitans. See Lynch & Suáraz Mayorga (2001). **Meta**: Villavicencio: vereda Vanguardia, quebrada Pozo Azul, 540 m (ICN 52595-97, 52603-16).

Hypsiboas geographicus. **Meta**: Vista Hermosa: La Macarena (ICN 2937, 2940).

Hypsiboas lanciformis. **Arauca**: Arauquita, Estación Cravo Norte, Caño Limón (Oxy), frente al Punto 5 (ICN 27273), sector Caño Limón 7, sitio Caño Otilla (ICN 27274-76, 27833), sector Matanegra (ICN 27834). **Boyacá**: Pajarito, Corinto, Quebrada Las Jotas, 1600 m (ICN 5148-49), Quebrada La Limonita, Finca el Descanso, 1600-1650 m (ICN 9481); Santa María: vereda Culima, 520 m (ICN 40651-57), charcos al lado carretera a Mámbita, 520 m (ICN 44790-91), Río Guairo, 520 m (ICN 44789, 44792). **Meta**: Acacias, vereda Alto Acaciitas, quebrada Caño Negro, 880 m (ICN 39429), vereda La Esmeralda, Centro Agroturístico Araguaney, 514 m (ICN 49392); Cubarral, El Dorado (ICN 39497); Guamal, Hda. Avichure, Km 7 a Campo Castillo, 550 m (ICN 14197-99); Villavicencio, Quebrada Pozo Azul (ICN 7104, 13518, 17321-22, 17390, 21309-12, 52492-94), vereda Villa Lorena, quebradas El Pendero y Vitola, 460 m (ICN 38430-31); Vista Hermosa: La Macarena (ICN 2973).

Hypsiboas punctatus. **Arauca**: Arauquita: Estación Cravo Norte (de la Occidental Oxy), Caño Limón, Punto 5 (ICN 27036-43), via Mata Negra—Yarumal, sitio Mata Negra 7 (ICN 26769-84), sitio Mata Negra 11 (ICN 26788), sitio Yarumal (ICN 26785-87), Yarumal 2 (ICN 27685-87), sector Caño Limón 7, sitio Caño Otilia (ICN 27055-62), sector vivero Caño Limón (ICN 27063-64), secor Yuca 16 y Yuca 41 (ICN 27829-32), Yuca 19 (ICN 27065-71), sector Yuca 21 (ICN 26788-99), Yuca 21, Caño Mata Negra (ICN 27047-54), sector Yuca 26 (ICN 26748-51), Relleno Sanitario (ICN 27044-46), sector Yuca 30 (ICN 27072-77), sector Yuca 36 (ICN 26752-53), Caño Mata Negra (ICN 26800-12), Caño Verde, (ICN 26754-67), embalse Las Truchas, 240 m (ICN 26746-47), via Caño Verde 1 (ICN 20734), via Caño Verde 2 (ICN 27035). **Boyacá**: Santa María: vereda Culima, carretera Sta. Maria—Mámbita, 520 m (ICN 40670-79, 44830-55). **Casanare**: Aguazul: carretera Pajarito—Agua Azul, quebrada Costa Grande, 860 m (ICN 9533, 9548-51). **Meta**: Acacias: vereda Alto Acaciitas, quebrada Caño Negro, 880 m (ICN 39434), vereda La Esmeralda, centro Agroturistico Araguaney, 514 m (ICN 49485-90), vereda San Juania, Río Orotoy, 850 m (ICN 14181-83), Km 13 carret. Villavicencio—Acacias, vereda Las Mercedes, 650 m (ICN 14201); Cubarral: El Dorado (ICN 39435-49, 39491-93); Cumaral: vereda Presentado, Hda. Altamira, caño La Toscaza (ICN 20652-53); Fuente de Oro: Km 9 Puerto Limón—Puerto Lleras, finca La Virginia (ICN 23025-58); Guamal: Hda. Avichure, Km 7 carr. a Campo Castillo, 550 m (ICN 14167-70); Puerto Limón: ± Km 10 carretera Puerto Limón—Puerto Lleras, desvío Finca La Virginia (ICN 11951-52, 11955, 12013); Restrepo: Km 2 a Cumaral, Km 9.7 a San Nicolás (ICN 36254), quebrada San Miguel, afluente del Río Upín (ICN 17357-67); Villavicencio (ICN 301, 20633-35), ca. Aeropuerto (ICN 37483-85), quebrada Pozo Azul (ICN 21321-23, 26268, 52600-02), Hda. Bacelona (ICN 300), cerca base aerea Aplay (ICN 1370-71), Km 6-7 carretera Villavicencio—Acacias, vereda Montecarlo, 650 m (ICN 14160-66, 14202-207), Km 8, V/cio—Acacias, 580 m (ICN 39451), Km 13, V/cio—Acacias, Hda Las Brisas (ICN 20521-23), Km 9-10 carretera Villavicencio—Puerto López, Hda. Santa Ana (ICN 13564), vereda Argentina (ICN 36313-19), vereda Las Mercedes, Caño Candelaria, 480 m (ICN 39450), 650 m (ICN 14200).

Osteocephalus carri. **Caquetá**: San Vicente del Caguan: bosques al norte de Guayatal, Río Peto, 1600 m (ICN 49936-37), Guayatal, vereda Cristo Rey, quebrada La Mica, (ICN 49932-35), 1500-1520 m (ICN 49938-48, 49950-61, 49963-81), 1500-1560 m (ICN 49982-86), Hacienda Andalucia, 1560-1600 m (ICN 49987, 49990-91), vereda La Esperanza (ICN 49992), entre Andalucia y La Escuela (ICN 49993-98). **Meta**: Acacias: vereda Loma de Pañuelo, quebrada El Sahagu, 720 m (ICN 39258), vereda Lomas de San Juan, Km 18 carretera alterna al Llanos, 1000 m (ICN 39259-60); Restrepo: cerca Río Caney, 740 m (ICN 4776), Salinas de Upín, quebrada Salinas, 750-760 m (ICN 21247), vereda Alto Caney, Bocatoma, 750 m (ICN 36283-86), 4 kms arriba de la estación, 1000 m (ICN 21244-46); Villavicencio, parte alta Caño Maizazo (ICN 26988), vereda La Unión, quebrada La Mina a La Unión, 270-640 m (ICN 39261-62).

Osteocephalus taurinus. **Meta**: Puerto Gaitán: Hda Carimagua (ICN 38072); Villavicencio: casco urbano (ICN 5750); Vista Hermosa: La Macarena: Río Guayabero (ICN 2316).

Phyllomedusa hypocondrialis. **Arauca**: Finca El Guafal de INDERENA (ICN 13788); Arauquita: Cravo Norte, Caño Limón, Caño Verde (ICN 26737). **Boyacá**: Santa María: vereda Calima, carretera a Mámbita (ICN 40727-34, 44816-17), Río Guario (ICN 44809-15). **Cundinamarca**: Medina: casco urbano (ICN 14618), 1 km NE Medina (ICN 14624-26), 4 km NNW Medina (ICN

14623), Km 15 N of Medina (ICN 14622), Paratebueno, vereda Palomares (ICN 14621), vereda Choapal, Km 3 a Gachalá (ICN 14619-20), Ubalá: inspección Mámbita, casco urbano (ICN 40840-43, 44818-22). **Meta**: Acacias: vereda La Esmeralda, centro Agroturistico Araguaney, 514 m (ICN 49511-14), vereda Vista Hermosa, Km 20 alterna al Llano (ICN 39256); Cubarral: El Dorado (ICN 39455-58); Cumaral: via Veracruz, desvío San Nicolás (ICN 39244-49); Fuente de Oro: Km 9 Puerto Llerás—Puerto Limón, finca La Victoria (ICN 23059-66, 23068-78, 23080, 23082-84); Puerto López: Hda Mozambique (ICN 1316-17); Puerto Lleras: Río Ariari, ca puerto (ICN 20554-55), Restrepo: Kirby's (ICN 2449-50), Km 2 a Cumaral, Km 9.7 a San Nicolás (ICN 36255-58, 36274), Km 18 a Cumaral, desvío San Nicolás (ICN 39250-55), vereda La Floresta, Hda San Nicolás (ICN 21402-04); Villavicencio: casco urbano (ICN 2452, 20618-26), Finca Santa Teresita, 15 km NE Villavicencio (ICN 586, 597, 601), Hda. El Bosque (ICN 18218), carretera a Cumaral (ICN 1373), carretera del amor (ICN 2421-22), quebrada Pozo Azul (ICN 13523-28, 21324-33, 52526-39), Km 13 a Acacias, Hda Las Brisas (ICN 20504), Río Ocoa, carretera a Puerto López (ICN 4765), vereda Las Mercedes, Km 15-16 a Acacias (ICN 14188-91, 14193); vivero Campo Alegre, carretera Catama—Puerto López (ICN 20589-97).

Phyllomedusa tarsius. **Meta**: Vista Hermosa: La Macarena (ICN 2970).

Pseudis paradoxa. **Arauca**: Finca El Guafal de INDERENA (ICN 13786); Arauquita: Cravo Norte, Caño Limón (ICN 27623, 27628-29), caño Otilia (ICN 27630), sector Matanegra (ICN 27624-25), Matanegra 7 (ICN 27851-53), sector Relleno sanitario (ICN 27626-27), sector Yarumal 2.4 (ICN 27850), sector Yuca 15 (ICN 27854), sector Yuca 26 (ICN 26745), sector Yuca 30 (ICN 27299), Caño Verde, embalse las Truchas (ICN 26743-44). **Meta**: Cumaral: laguna desvío a Veracruz, via a San Nicolás (ICN 36306-08, 38959-69), vereda Laguna Negra, Km 5 a San Nicolás (ICN 36309-12); Puerto Llerás: Río Ariari, camino a Granada (ICN 12507-09); Restrepo: via Cumaral, Km 10 a San Nicolás (ICN 17437-49, 17451-54, 17456, 17460-61, 17463-69), Km 12 E a San Nicolás, via Cumaral (ICN 26213), Km 12.4 a Cumaral, Km 9.6 a San Nicolás (ICN 33416-17, 34968-69); Villavicencio, Km 18 a Puerto López, centro El Hachón (ICN 38970).

Scinax blairi. **Arauca**: Arauquita: Cravo norte, Caño Limón, sector Yuca 21 (ICN 27921). **Guaviare**: San José de Guaviare: Río Guaviare, frente a boca del Río Ariari (ICN 173, 175-76, 178-79, 181, 183, 185-89, 602). **Meta**: Cubarral: Puerto Angosturas, Río Ariari (ICN 37344-45); Fuente de Oro: Km 9 Puerto Limón—Puerto Llerás, finca La Virginia (ICN 20538-40, 20542); Granada o San Juan de Arama o Vista Hermosa: Guadalito, Río Güejar (ICN 2431—34, 2436-39); Puerto Limón: Km 10 a Puerto Llerás, desvio a finca La Virginia (ICN 11956-60, 11964-65, 11967-68, 11970); Villavicencio: vereda Vanguardia, quebrada Pozo Azul, 540 m (ICN 52510, 52512-14, 52579).

Scinax rostratus. **Meta**: Acacias: vereda La Esmeralda, centro Agroturistico Araguaney, 514 m (ICN 49533-36, 49538-42), finca Altamira (ICN 49537), finca Versailles (ICN 49543), vereda Llano Grande (ICN 14255); Cubarral: El Dorado (ICN 39499); Cumaral: vereda Presentado, Hda Altamira, Km 11 E Cumaral (ICN 21355); Fuente de Oro: Km 19 Puerto Limón—Puerto Llerás (ICN 34324-26); Puerto Limón: Km 10 a Puerto Llerás, desvío a finca La Virginia (ICN 11953); Puerto López: vereda Menegua, fincas El Lagunazo y Lusitania (ICN 13496-512, 13516), vereda San Pablo, Laguna La Mugrienta (ICN 36352-53); Puerto llerás: Río Ariari, ca aeropuerto (ICN 20556); Restrepo: casco urbano (ICN 37022-25), Km 2 via a Cumaral, Km 9.7 a San Nicolás (ICN 36268), Km 12 desvío a San Nicolás (ICN 17369-72), carretera a Cumaral, vereda La Floresta, Hda San Nicolás (ICN 21340-54, 21356-58), vereda Alto Caney, bocatoma (ICN 36287); Villavicencio: casco urbano (ICN 37028-35), carretera del amor (ICN 1306), carretera a Cumaral (ICN 1374), Km 13 a Acacias, Hda Las Brisas (ICN 20495-97), Km 9-10 a Puerto López, Hda Santa Ana (ICN 13587-88), Km 18 a Puerto López, centro El Hachón (ICN 6360-61), quebrada Pozo Azul (ICN 13513-15, 52540-52).

Scinax ruber. **Meta**: Acacias: vereda La Esmeralda, centro Agroturistico Araguaney, 514 m (ICN 49544-55, 49557), finca Campo Algre (ICN 49556), finca Versailles (ICN 49558); Cubarral: Puerto Angostura, vereda Palomas (ICN 37379); Fuente de Oro: Km 9 Puerto Limón a Puerto Llerás, finca La Virginia (ICN 20541, 23097-99); Puerto Limón: Km 10 a Puerto llerás, desvío a finca La Virginia (ICN 11947, 11961-63, 11966, 11969); Puerto López: finca Caño Matoso (ICN 36320), Hda San Pablo, laguna La Mugrienta (ICN 36321); Restrepo: Km 2 a Cumaral, Km 9.7—12 a San Nicolás (ICN 17373-74, 36269), Km 9 a pozo petrolero (ICN 21223); Villavicencio: casco urbano (ICN 20636-37), Hda El Buque (ICN 37075), cerca de Barcelona (ICN 2453), Caño Quetame, finca Los Naranjos (ICN 37380-84), Km 18 a Puerto López, centro El Hachón (ICN 37449), vereda Vanguardia, quebrada Pozo Azul, 540 m (ICN 52509, 52578).

Scinax wandae. **Cundinamarca**: Medina: 1 km NE Medina (ICN 14647). **Meta**: Acacias: Alto Acaciitas, quebrada Caño Negro (ICN 37232, 39524), centro Agroturistico Araguaney, 514 m (ICN 49559-74, 49605-06), finca Versailles (ICN 49575-604, 49607-12); Cubarral: El Dorado (ICN 39500-01), Puerto Angosturas, Río Ariari (ICN 37349-50); Cumaral: casco urbano (ICN 20584, 37026-27), vereda La Balastrera, Hda Altamira, Caño Atascasa (ICN 36289-98), vereda Presentado, Hda Altamira, Caño La Toscana (ICN 20654-57, 21275-76, 21454), via a San Nicholás,

Laguna desvío Veracruz (ICN 36288); Fuente de Oro: Km 9 Puerto Limón a Puerto Llerás (ICN 20571-83); Guamal: Hda Avichure, Km 7 a Campo Castilla (ICN 23086, 23089-95); Puerto López: Cafam Llanos (ICN 37234-35), Hda Mozambique (ICN 1323), pozos Matamata (ICN 37351); Restrepo: Km 2 a Cumaral, desvío Km 12 a San Nicolás (ICN 17375-81, 17383, 17385-89), vereda San Nicolás, Hda Alcancía (ICN 21265-74), vereda La Floresta (ICN 21277); San Juan de Arama: La Curia (ICN 18227); Villavicencio: casco urbano (ICN 1985-86, 1992, 1994, 1996, 1998, 2000—02, 2008-11, 2014-15, 2017-18, 2460-62), Hda El Buque (ICN 2511), carretera Catama—Puerto López (ICN 20608-11), Km 9-10 a Puerto López, Hda Santa Ana (ICN 13589, 14645-46), Km 18 a Puerto López, centro El Hachón (ICN 37346-48), vereda Apiai (ICN 52516), vereda Las Mercedes, Caño Candelaria (ICN 37232, 39518-23), vereda Vanguardia, quebrada Pozo Azul, 540 m (ICN 52511, 52570).

Sphaenorhynchus lacteus. **Meta**: Fuente de Oro: Km 9 Puerto Limón a Puerto Llerás, finca La Virginia (ICN 20528-30), Km 10 (ICN 11948-50); Puerto Llerás: Río Ariari, frente al puerto (ICN 20546-52).

Trachycephalus venulosus. **Meta**: Acacias: vereda La Esmeralda, centro Agroturistico Araguaney, 514 m (ICN 49510); San Martín: vereda Baja Humadea, Caño Rubiano, 490 m (ICN 2636); Villavicencio: Caño Quetame, finca Los Naranjos (ICN 38914-15).

Familia Leptodactylidae
Adenomera hylaedactyla. **Meta**: Acacias: vereda Portachuelo, 1400 m (ICN 5036); Restrepo: Salinas de Upín, 650 m (ICN 5112); Villavicencio, casco urbano, 580 m (ICN 43821), Hda. Las Brisas (ICN 20501).

Eleutherodactylus frater. **Boyacá**: Santa María: vereda Cachipay, Alto Calichama, quebrada Montenegro (ICN 40582-83, 40586), vereda Caño Negro, (ICN 49851-914), Alto Cristalina (ICN 40576-81, 40585, 40587), finca La Rosita (ICN 49839-50). **Cundinamarca**: Quetame: Alto del Tigre, carretera Guayabetal—El Calvario (ICN 5115-17), Km 22 al Alto del Tigre (ICN 9879); Ubalá: Mámbita, vereda Campo Hermosa, quebrada San José (ICN 40947), vereda Puerto Solla, Rio Zaguea (ICN 40937-38). **Meta**: Acacias: Hda Portachuelo (ICN 5040-44, 5074-80, 9875-78, 9880), Vista Hermosa, Km 20 carr. alterna a Llano (ICN 39547-48), quebrada El Roble (ICN 39829); Cubarral: El Dorado (ICN 39479-82, 39488-89); Restrepo: vereda Alto Caney, 1000 m (ICN 21231-34), Km 2 a Cumaral, Km 9.7 a San Nicholás (ICN 36252); Villavicencio: piedemonte (ICN 1943).

Eleutherodactylus medemi. Also, see Lynch (1994). **Cundinamarca**: Ubalá: Mámbita, vereda boca del Monte (ICN 42763). **Meta**: Acacias: Alto Acaciitas, Caño Negro (ICN 39539-43, 39545-46), vereda Loma del Pañuelo, quebrada El Sahagú (ICN 39534), vereda Vista Hermosa, quebrada El Roble (ICN 39530-31, 39535-38, 39544, 39573), Km 20 carr. alterna al Llano (ICN 39532, 39548); Cubarral: El Dorado (ICN 39484-85, 39583); Restrepo: vereda Alto Caney (ICN 39549-50, 39568-70), vereda Santa Lucia, quebrada "del Ortez" (ICN 39571-72); Villavicencio: Caño El Buque (ICN 34849-54), Caño Parado (ICN 2465-67), quebrada Pozo Azul (ICN 34855-59, 52495-506), vereda La Unión, quebrada La Mina (ICN 39533), vereda Villa Lorena (ICN 39527-29).

Eleutherodactylus savagei. Also see Lynch (1994). **Boyacá**: Santa María: vereda Caño Negro (ICN 49865-78, 49887-906), finca El Tesoro (ICN 49879-86), finca La Rosita (ICN 49857-64). **Meta**: Acacias: vereda Guayuriba, escuela Guayuriba (ICN 39579-81), vereda La Palma, Caño Negro (ICN 39585), vereda Loma del Pañuelo, quebrada El Sahagú (ICN 39575-78), vereda Vista Hermosa, Km 20 carretera alterna al Llano (ICN 39584), quebrada El Roble (ICN 39583); Cubarral: El Dorado (ICN 39486-87); Villavicencio: Bosque Bavaria, Km 3 a Restrepo (ICN 39574), vereda La Unión, quebrada La Mina (ICN 39586).

Leptodactylus colombiensis. **Arauca**: Arauquita: Cravo Norte, Caño Limón, Caño Limón 7 (ICN 27881-82), Caño Mata Negra (ICN 26826-29, 27263-65), Caño Verde (ICN 26813), Caño Verde, Embalsa las Truchas, 240 m (ICN 26830), via Mata Negra—Yarumal, sitio Matanegra 11 (ICN 26814-22, 27232-60), sector Relleno sanitario (ICN 27261), sector vivero Cano Limón (ICN 27266-67), sector Yuca 21 (ICN 26823-25, 27262). **Boyacá**: Garagoa: Km 3 carr. Garagoa—Miraflores (ICN 18370-72), Km 26 carr. Garagoa—Miraflores, vereda El Tunjito, finca El Vergel, 2330 m (ICN 12919-20, 21991); Pajarito: Corinto, 1600 m (ICN 5150-51, 9558-62, 9722-29); Santa María: vereda Cachipay, Alto Calichama, quebrada Montenegro (ICN 40704), vereda Culima, carr. a Mámbita, 520 m (ICN 40702-03). **Casanare**: Aguazul: casco urbano, 860 m (ICN 9561-63, 9583). **Cundinamarca**: Medina: casco urbano, 520 m (ICN 14430-35), vereda Choapal, aprox. 7 kms NNE, carr. Medina—Gachalá, 620 m (ICN 14628), Paratebueno, vereda Palomares, sitio Brisas del Llano (ICN 14649); Ubalá: Mámbita, vereda Puerto Solla, Río Zaguea, 500 m (ICN 40955), inspección Mámbita, 520 m (ICN 44933). **Guaviare**: Barracán, caño La Sal (ICN 42751-52). **Meta**: La Macarena (ICN 2952-54); Acacias: vereda Acacitas, quebrada caño Negro (ICN 39836), vereda San Juanito, Río Orotoy, 500 m (ICN 14119-22); Cubarral: El Dorado (ICN 39510-12); Cumaral: vereda La Balastrera, Hda Altamira, caño Atascosa (ICN 36330-31), vereda Laguna Negra, ca 5 kms via a San Nicolás (ICN 36332-34), vereda Presentado, Hda Altamira, caño La toscaza (ICN 20648-51); Fuente de Oro: Km 9 carr Puerto Limón—Puerto Llerás (ICN 18146-47); Guamal: Hda Avichure, Km 7 a Campo Castilla (ICN 14127); Puerto López: Hda Mozambique, 180 m (ICN 1310-

14, 1322), vereda Menegua, 250 m (ICN 18159-61), via a Puerto López, Km 18 , Hda Hachón (ICN 18089, 38971-75), Km 9, Hda Santa Ana (ICN 2451, 2952-54, 2957); Puerto Llerás: Río Ariari (ICN 20553); Restrepo: casco urbano, 500 m (ICN 18158); San Juan de Arama: La Curia (ICN 18226); Villavicencio: casco urbano, ca 500 m (ICN 2356-57, 18107-10, 18351-52, 20645-47, 21317, 35559, 43820), 15 km NE Villavicencio, finca Santa Teresita (ICN 594), carretera a Acacias, Km 13, Hda Las Brisas (ICN 20509-10), vereda Montecarlo (ICN 14123-25), carretera a Cumaral (ICN 1375), carretera a Puerto López, Km 9 (ICN 14629), vereda Las Mercedes, caño Candelaria (ICN 39834-35, 39837), vereda Vanguardia, quebrada Pozo Azul, 540 m (ICN 18082-84, 18088-89, 18092, 36335, 52598-99).

Leptodactylus fuscus. **Arauca**: Arauquita: Cravo Norte, Caño Limón (ICN 27197), campamento Limonar (ICN 27659, 27662), campamentos Caño Limón, Cravo Norte y Limonar (ICN 27658, 27660), Caño Mata Negra (ICN 27204), relleno sanitario (ICN 27199-201, 27891), sector Caño Limón 7 (ICN 27657, 27888), sector Yuca 16 y Yuca 41 (ICN 27884-87), sector Yuca 21 (ICN 27202-03), sector Yuca 26 (ICN 27198), sector Yuca 30 (ICN 27210), vivero (ICN 27205-09, 27656), vivero casa verde (ICN 27661). **Meta**: Acacias: vereda La Esmeralda (ICN 49495), centro Agroturistico Araguaney (ICN 49491, 49494), finca Buenas Aires (ICN 49492-93), vereda Vista Hermosa, Km 20 carr. alterna al Llano (ICN 39833); Cubarral: El Dorado (ICN 39514-16); Cumaral: vereda Laguna Negra, 5 kms de San Nicolás (ICN 36340-41); Granada: casco urbano (ICN 18111); Puerto Gaitán: casco urbano (ICN 44010); Puerto López: Río Yucas, finca El Dorado (ICN 18105, 18160), vereda Menagua, fincas El Lagunaso y Lusitania (ICN 13446-49, 13452, 13456, 13462-63, 13465, 13470-72, 13474-78, 13484); Restrepo: casco urbano (ICN 42539-41), Km 2 a Cumaral, Km 9.7 a San Nicolás (ICN 36263, 36273), vereda San Nicolás, 1-2 kms E Hda Alcancía (ICN 21242-43); Villavicencio: casco urbano (ICN 2360, 2443, 2609, 2637), Hda El Buque (ICN 35557-58), Km 3 carretera del amor (ICN 9372-76, 9378), Km 13 a Acacias, Hda Las Brisas (ICN 20508), Km 9-10 a Puerto López, Hda Santa Ana (ICN 13560-62), quebrada Pozo Azul (ICN 13479-83, 13488, 13490-92, 13494-95, 52518-25) .

Leptodactylus insularum. **Arauca**: Arauquita: Cravo Norte, Caño Limón, Caño Limón 7, Caño Otilia (ICN 27683-84), Caño Mata Negra (ICN 26839-41), sector relleno sanitario (ICN 27890), sector Yuca 26 (ICN 26833), vivero Caño Limón (ICN 27228-31), vivero “casa verde” (ICN 27680-82), via Mata Negra—Yarumal, Matanegra 2 (ICN 27226-27), Matanegra 7 (ICN 26838), Matanegra 11 (ICN 26834-37). **Meta**: Puerto López: vereda San Pablo, Laguna La Mugrienta, 200 m (ICN 36355-58); Restrepo: vereda San Nicolás, Hda Alcancía, 430 m (ICN 21241); Villavicencio: casco urbano (ICN 2315).

Leptodactylus knudseni. **Meta**: Villavicencio: alrededores de Villavicencio (ICN 14094); Pozo Azul, Km 7 carretera Villavicencio—Restrepo, ca 650 m (ICN 13941-43).

Leptodactylus mystaceus. **Boyacá**: Santa María: vereda Culima, carretera a Mámbita (ICN 40705). CUNDINAMARCA: Ubalá: Inspección San Pedro de Jaque, Puerto Solla, 560 m (ICN 42762).

Leptodactylus pentadactylus. Heyer (1979) provides some records for the Villavicencio region.

Lithodytes lineatus. **Cundinamarca**: Ubalá: Mámbita, Puerto Solla, Río Zaguea, 500 m (ICN 40955). **Meta**: Acacias: vereda La Esmeralda, centro Agroturistico Araguaney, 514 m (ICN 49505-09), vereda San José, carret. a Guamal (ICN 14256); Granada o San Juan de Arama: finca Guadalito, Río Güejar (ICN 2430); Restrepo: Salinas del Alto Upín (ICN 2889-90); Villavicencio: quebrada Pozo Azul (ICN 21318).

Physalaemus enesefae. **Meta**: Acacias: vereda La Esmeralda, centro Agroturistico Araguaney, 514 m (ICN 49515-20, 49523-27, 49529-30), finca Buenas Aires (ICN 49521-22), finca Versailles (ICN 49528, 49531); Cumaral: vereda Laguna Negra, 5 kms de San Nicolás (ICN 36328-29), vereda Presentado, Hda Altamira, 11 kms E Cumaral (ICN 21248-53); Puerto López: vereda Menegua, finca Lagunaso (ICN 13519-22); Restrepo: Km 2 a Cumaral, Km 10 a San Nicolás (ICN 17395-98), Km 12 a San Nicolás (ICN 17391-94), Km 12 E carretera Cumaral—San Nicolás (ICN 21359); Villavicencio: casco urbano (ICN 2424, 38983-84), Km 13 carr. a Acacias, Hda Las Brisas (ICN 20506-07), vereda Argentina (ICN 36327), vereda Vanguardia, quebrada Pozo Azul, 540 m (ICN 52580-89).

Pseudopaludicola boliviana. **Meta**: Acacias: vereda La Esmeralda, finca Versailles (ICN 49532), vereda San José, Rio Acacias, 670 m (ICN 14126); Cubarral: vereda Marayal, caño Marayal, 630 m (ICN 14260); Cumaral: vereda Presentado, Hda Altamira (ICN 14036); Fruente de Oro: Km 9 Puerto Limón a Puerto Llerás, Caño Iracá (ICN 14392-93); Restrepo: Km 2 a Cumaral, Km 9.7 a San Nicolás (ICN 35285-88, 35291, 35294-95, 35298, 35300-10, 36266), vereda Alto Caney, bocatoma, 750 m (ICN 36305); Villavicencio: Km 13 a Acacias, Hda Las Brisas (ICN 20502), Km 9-10 a Puerto López, Hda Santa Ana (ICN 13555-57, 13559, 13582-83, 13851), vereda Vanguardia, quebrada Pozo Azul, 540 m (ICN 52571-77).

Familia Microhylidae

Elachistocleis ovale. **Arauca**: Arauquita: Cravo Norte (ICN 3390). **Casanare**: Orocué: casco urbano (ICN 44663-64). **Guaviare**: San José de Guaviare (ICN 130-31). **Meta**: Acacias: vereda La Esmeralda, centro Agroturistico Araguaney y fincas adyacentes (ICN 49370-86); Cubarral: El Dorado (ICN 39502); Puerto López: finca El Dorado (ICN 43671-72), Menegua, Hda

Lagunazo (ICN 26277), Hda Mozambique (ICN 1543); Restrepo: via Cumaral, Km 10 a San Nicolás (ICN 14258, 18209-30), Km 2 carr. a Cumaral, 9.7 km a San Nicolás (ICN 36264-65); San Martín: finca Los Guadales (ICN 2617); Villavicencio: casco urbano (ICN 4760), Hda El Buque (ICN 3388-89), Km 13, carr. V/cio a Acacias, Hda Las Brisas (ICN 20511-13), Km 9 carr a Puerto López, Hda Santa Ana (ICN 17433, 17435-36, 18178), Km 15 a Puerto López, Caño Vigía (ICN 9368-70).

Familia Pipidae
Pipa pipa. **Meta**: Puerto López (ICN 13959-66).

Familia Ranidae
Rana palmipes. See Acosta (2000).

CAECILIDOS
Familia Caeciliidae
Siphonops annulatus. Also see Lynch (2000). **Meta**: Acacias: centro Agroturistica Araguaney, 514 m (ICN 49613-22, 49624-26), finca Altamira (ICN 49623).

Familia Typhlonectidae
Potomotyphlus kaupii. See Lynch (2000).

Typhlonectes compressicauda. **Meta**: Puerto Gaitán: Hda Orquídeas (ICN 53001).

SALAMANDRAS
Familia Plethodontidae
Bolitoglossa altamazonica. **Boyacá**: Santa María: vereda Cachipay, Alto Calichama, quebrada Montenegro (ICN 48079), vereda San Rafael (ICN 40724-25), quebrada Las Moyas, sendero a Chivor (ICN 40724). **Cundinamarca**: Medina: vereda Choapal, 6-7 km NNW Medina (carr. Medina—Gachalá), 580-630 m (ICN 14676-99, 14800). **Meta**: Acacias: vereda Loma de Pañuelo, quebrada El Sahagú, 720 m (ICN 39595-97); Restrepo: vereda Santa Lucía, 920-980 m (ICN 37911); Villavicencio: 640-700 m (ICN 37909-10), vereda Vanguardia, quebrada Pozo Azul, 540 m (ICN 26269, 48076-78, 52507-08).